

Definitions

$$\sin \theta = \frac{y}{r}$$

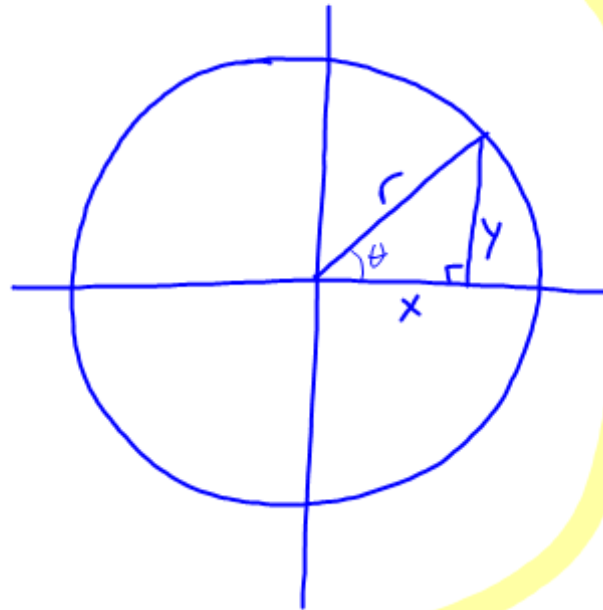
$$\cos \theta = \frac{x}{r}$$

$$\tan \theta = \frac{y}{x}$$

$$\csc \theta = \frac{r}{y}$$

$$\sec \theta = \frac{r}{x}$$

$$\cot \theta = \frac{x}{y}$$

Reciprocal Identities

$$\sin \theta = \frac{1}{\csc \theta} \quad \csc \theta = \frac{1}{\sin \theta}$$

$$\cos \theta = \frac{1}{\sec \theta} \quad \sec \theta = \frac{1}{\cos \theta}$$

$$\tan \theta = \frac{1}{\cot \theta} \quad \cot \theta = \frac{1}{\tan \theta}$$

Ranges

$$-1 \leq \sin \theta \leq 1$$

$$-1 \leq \cos \theta \leq 1$$

$\tan \theta$ all \mathbb{R}

$$\csc \theta \leq -1 \quad 1 \leq \csc \theta$$

$$\sec \theta \leq -1 \quad 1 \leq \sec \theta$$

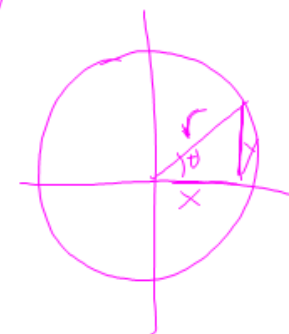
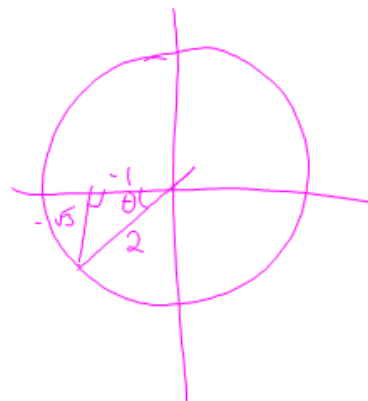
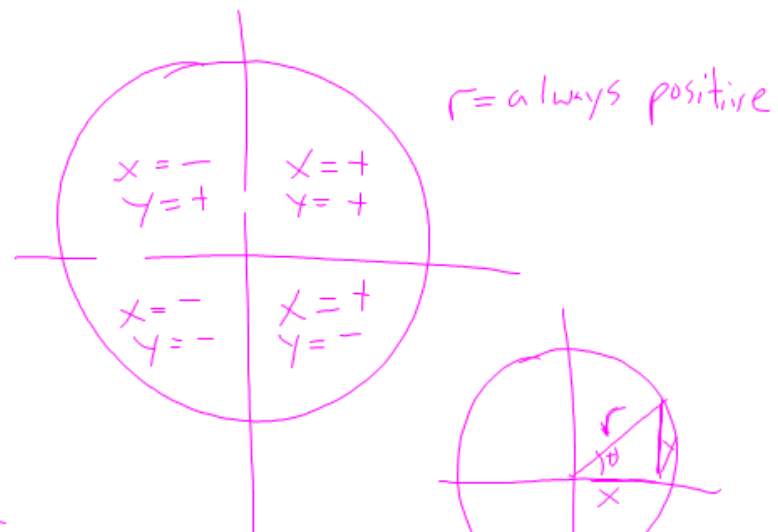
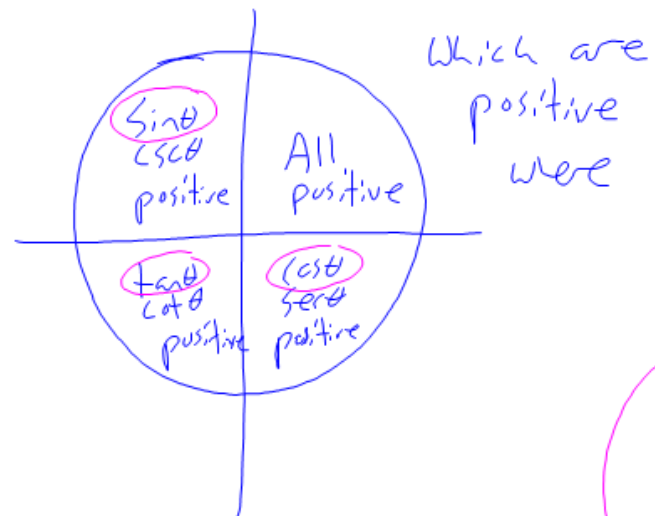
$\cot \theta$ all \mathbb{R}

Quadrantal Angles

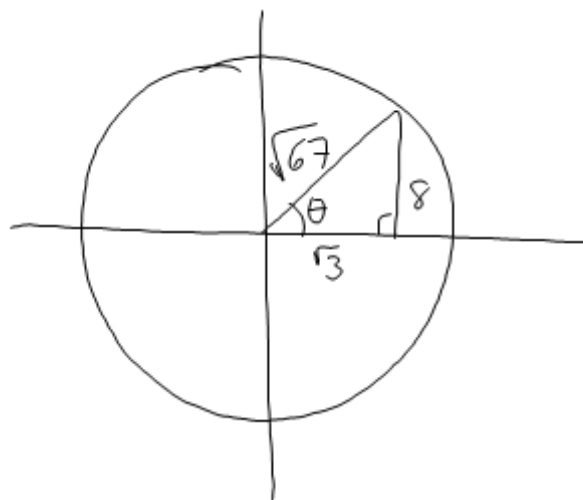
think coordinates

Signs of trig functions

All Silver Tea Cups



(69) $\cot \theta = \frac{\sqrt{3}}{8}$, quad 1



$$\sin \theta = \frac{8\sqrt{67}}{67} \quad \frac{8}{\sqrt{67}} \cdot \frac{\sqrt{67}}{\sqrt{67}} = \frac{8\sqrt{67}}{67}$$

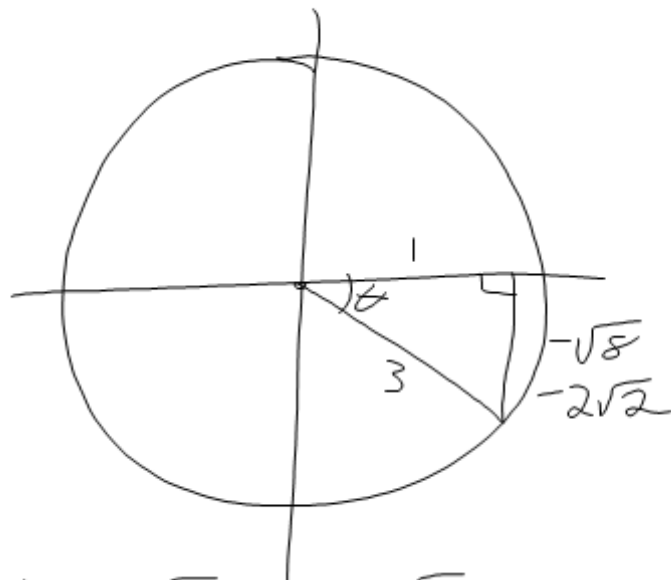
$$\cos \theta = \frac{\sqrt{3} \cdot \sqrt{67}}{67}$$

$$\tan \theta \rightarrow \frac{8\sqrt{3}}{3}$$

$$\csc \theta = \frac{\sqrt{67}}{8}$$

$$\sec \theta = \frac{\sqrt{67} \cdot \sqrt{3}}{3}$$

(55)

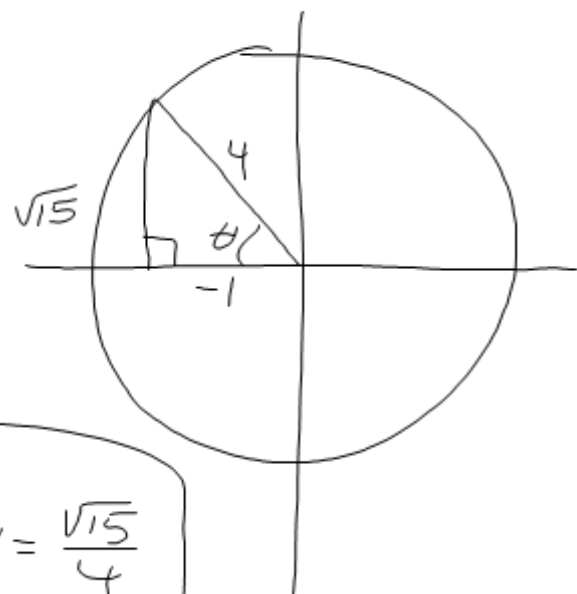
Find $\tan \theta$ if $\sec \theta = \frac{3}{1}$, quad IV

$$-\sqrt{8} = \sqrt{4} \cdot \sqrt{2}$$

$$-2\sqrt{2}$$

$$\tan \theta = \frac{-2\sqrt{2}}{1} = -2\sqrt{2}$$

56 Find $\sin \theta$, $\cos \theta = -\frac{1}{4}$, Quad II



$$\sin \theta = \frac{\sqrt{15}}{4}$$

71

$$\sin \theta = 0.164215$$

Quad II

Sect. 1.1 #31, 35, 37, 63-68(1)

Sect. 1-2 #62

Sect. 1.3 #27, 42, 60

Sect. 1.4 #24, 57, 60